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CORRESPONDENCE
CONTROL

Department of Energy

ROCKY FLATS FIELD OFFICE
10808 HIGHWAY 93, UNIT A
GOLDEN, COLORADO 80403-8200

APR 25 2001

01-DOE-00756

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Denver, Colorado 80202-2450

Mr. Steven Gunderson
Rocky Flats Cleanup Agreement Project Coordinator
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

Dear Gentlemen:

We are in receipt of your letter of March 2, 2001, on the results presented on the Solar Ponds Plume Treatment System that were presented in the Quarterly Report for the Rocky Flats Groundwater Plume Treatment Systems, October through December 2000, and are providing the following responses. These responses are based on information provided earlier through other, less formal communications about this issue.

Comment

Although the effluent from the discharge gallery does not exceed the temporary modification of 100 mg/l for nitrates (thereby fulfilling the requirement as specified in the IM/IRA), the agencies would strongly disagree with the statement on page 19 of the report that the system is providing treatment for uranium and nitrate as designed.

Response

The temporary modification of 100 mg/l for nitrate is not exceeded in North Walnut Creek. The text referred to above was in the conclusion section and stated "The treatment cell appears to be providing treatment for nitrate and uranium as designed." The text was intended to refer to the treatment cell, which is working better than expected probably because of the low flow rates and consequently, the longer residence times. However, as a result of this comment, the conclusion was revised in the Quarterly Report for January through March to state that "The treatment cell appears to be performing as designed even though water levels in the collection trench continue to fluctuate rather than holding constant at 11 feet."

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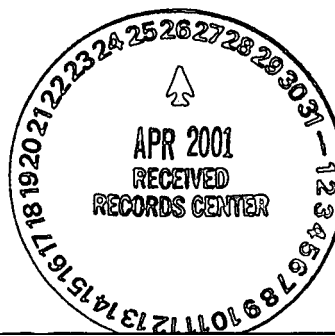
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Corres. Control RFP

4/25/01 *JK*
Date By

Ref Ltr. #

DOE ORDER # *None*

DOCUMENT CLASSIFICATION
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ADMIN RECORD

BZ-B-000067

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Comment

It is apparent from the previous year's data that the ground water collection system only reaches the required 11 feet of head when there is a precipitation event. This means that the system is primarily treating water diluted with infiltration as evidenced by influent concentrations that are lower than concentrations in the lower portion of the plume monitored at the discharge gallery.

Response

As noted, the Solar Ponds Plume Treatment system only treats groundwater when precipitation events cause the collection trench water levels to rise sufficiently to flow into the treatment cell. However, the Department of Energy (DOE) disagrees with the statement that only groundwater diluted with infiltration is being treated by the system. The influent concentrations are measured monthly in the collection trench and generally range between 110 and 170 mg/l nitrate whether or not there is flow into the treatment system.

As noted, the nitrate concentrations present at the discharge gallery are generally higher than the influent concentrations. However, the discharge gallery was placed at the best location based on the existing topography, and happens to lie within the highest concentration portion of the downgradient nitrate plume, the zone of sacrifice. Nitrate concentrations at the groundwater well immediately adjacent to the discharge gallery have been monitored for over 10 years and are consistently around 500 mg/l.

This high concentration part of the plume is immediately downgradient of the pre-existing Interceptor Trench System (ITS) Pumphouse where groundwater collected by the ITS drainage system was temporarily stored in a collection sump prior to pumping to the Modular Storage Tanks for storage or to Building 374 for treatment. The collection sump was not impermeable, and appears to have locally recharged the area with the higher concentration groundwater historically collected from the upgradient part of the plume. This recharge probably caused the higher concentration plume observed in the area.

Whatever the cause of the downgradient portion of the plume, and as explained in the Quarterly Reports, this part of the plume is contributing to the nitrate concentrations observed in the treatment gallery. However, since January 2001, the nitrate concentrations in the discharge gallery samples have declined and are now very similar to the equivalent concentrations seen at the treatment system influent. This indicates that the contribution from the downgradient portion of the plume has declined and this part of the plume may no longer be contributing significant contamination to the discharge gallery.

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Comment

When the head in the collection system is below the 11 feet required to feed into the treatment system, the head in the collection trench repeatedly drops to an elevation of 5880 feet, 5 feet below the required head. There is currently no way to know where this water is going, whether it is leaking back into the formation and resaturating the claystone as DOE has proposed, or if it could be underflowing the collection system as the state has suggested. Allowing the system to operate in this manner defeats the purpose of installing the collection trench into bedrock to collect the contaminants found to be migrating below the ITS collection system.

Response

The flow rate and nitrate concentrations present at the discharge gallery strongly indicate that the pre-existing ITS downgradient of the collection trench is collecting the water bypassing the system. This water is then discharged at the discharge gallery. Observation of the area since installation has shown no evidence to suggest that the water could be going anywhere else but to the discharge gallery.

Comment

Section 4.3 of the Quarterly Report states that the site intends to monitor the Solar Ponds Treatment System in fiscal year 2001 for seasonal impacts and to determine if other actions are required. At this time, we do not believe the site has the means of collecting all the data needed to determine if other actions are required. There is currently no way to investigate ground water flow in the vicinity of the collection trench. In our opinion, the site would need piezometers above and below the trench to develop a picture of the actual ground water flow into and out of the trench and to investigate whether the weathered claystone is becoming re-saturated.

Response

The DOE has no plans to install additional piezometers. As discussed above, the monitoring data indicate that water bypassing the treatment system is being collected by the downgradient part of the pre-existing ITS and then discharged at the system discharge gallery. Surface water quality is expected to provide the most appropriate information for making decisions. In addition, groundwater flow in the area is complex and greatly impacted by the presence of the pre-existing ITS laterals. As determined during system construction, the ITS laterals preferentially transport groundwater and the claystone between the laterals was unsaturated. Flow into the collection trench is controlled primarily by the ITS laterals. As stated above, groundwater flow bypassing the collection trench is also collected by the downgradient laterals and directed into the discharge gallery. While it is possible that installation of downgradient piezometers may provide additional information on where water is being lost, this information will not assist with the decision making process.

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Comment

There is not a long period of time between now and the projected site closure of 2006 in which to collect data to evaluate these problems. The State and EPA will not be willing to sign off on a CAD/ROD for Rocky Flats if there is still a high level of uncertainty as to whether the underlying standard for nitrates will be met once the temporary modification expires (currently in 2009). There are also uncertainties relative to when the uranium ground water plume will peak at the collection system and at what concentration. There are questions concerning the long-term stewardship ramifications of having an imperfect treatment system in place for these plumes. As you know, we are working to define some important cleanup and closure decisions in the RFCA Integrated Decision Document, tentatively scheduled in the 2002-2003 timeframe. The agencies will want the solar ponds treatment system addressed as part of the framework in that decision document. The site will also have to discuss the status of meeting the underlying standard for nitrates at the next Water Quality Control Commission South Platte Triennial Review in 2003.

Response

The DOE is committed to meet stream standards at closure when the temporary modification for nitrate no longer applies. For that reason, a decision tree was developed to evaluate present conditions and decision points to determine if and when an action may be required to meet current standards. The decision process includes evaluating uranium concentrations at the influent location to determine whether an action is required based on increasing uranium concentrations. In addition, the future conditions are being evaluated to determine if an action is required to meet the applicable standards at Site Closure.

Currently, the Rocky Flats Environmental Technology Site (Site) is meeting the future nitrate standard of 10 mg/l at the Site boundary. For example, for calendar year 2000, the 85th percentile of nitrate levels in Walnut Creek at Indiana Street was 3.3 mg/L. This compares favorably to the lower reaches of Big Dry Creek where the 85th percentile level is 4 times higher. The current uranium standard is based on ambient conditions. Because the uranium in the stream sediments has been determined to be naturally occurring, the standard may change now that the Environmental Protection Agency (EPA) has promulgated the MCL of 30 mg/l.

However, as the final end state of the Site will be determined over the next few years with input from stakeholders, the final Site Conditions cannot currently be evaluated. Therefore, the decision tree shows the process that will be used over the next few years to continually evaluate the impact at Site Closure from the Solar Ponds Plume to determine if additional actions will be required. Since this letter was received, the decision tree was briefed to both the EPA and the Colorado Department of Public Health and Environment and is provided on Enclosure 1.

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Comment

Given these arguments, the agencies contend that the Site needs to develop a more substantive and definitive schedule and timeframe for actions that might be appropriate to address the ability of the solar ponds plume treatment system to meet the underlying standard for nitrates, and to reduce uncertainty that the uranium surface water standard will be met in the future. We suggest that the technical aspects of such a schedule could be discussed in the Water Working Group.

Response

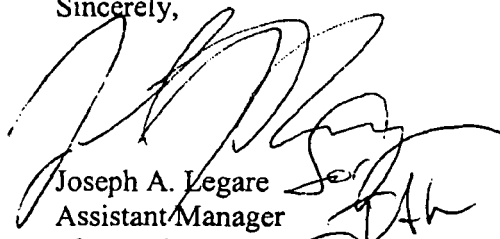
While the collection system is not fully functioning as it was originally intended, the treatment cell is functioning better than anticipated, probably due to the increased residence time. However, the intended outcome of meeting surface water standards in North Walnut Creek is being achieved now, and is projected to continue to be achieved at Site Closure even after the temporary modification to the nitrate standard has expired.

As stated in the previous comment response, the decision tree was developed to exhibit the conditions that would require an action to be taken. A separate decision process is in place to evaluate the impact at Site Closure from the Solar Ponds Plume to determine if additional actions will be required.

As suggested in the letter, the current status of the project and the decision process is scheduled to be briefed at the Water Working Group Meeting on May 25, 2001.

If you have any comments or issues concerning these responses, please contact Norma Castaneda at (303) 966-4226 or contact me at (303) 966-5918.

Sincerely,



Joseph A. Legare
Assistant Manager
for Environment and Infrastructure

Enclosure

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01-DOE-00756

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cc w/Enc.:

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N. Castaneda, ERWM, RFFO

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J. Stover, AI, RFFO

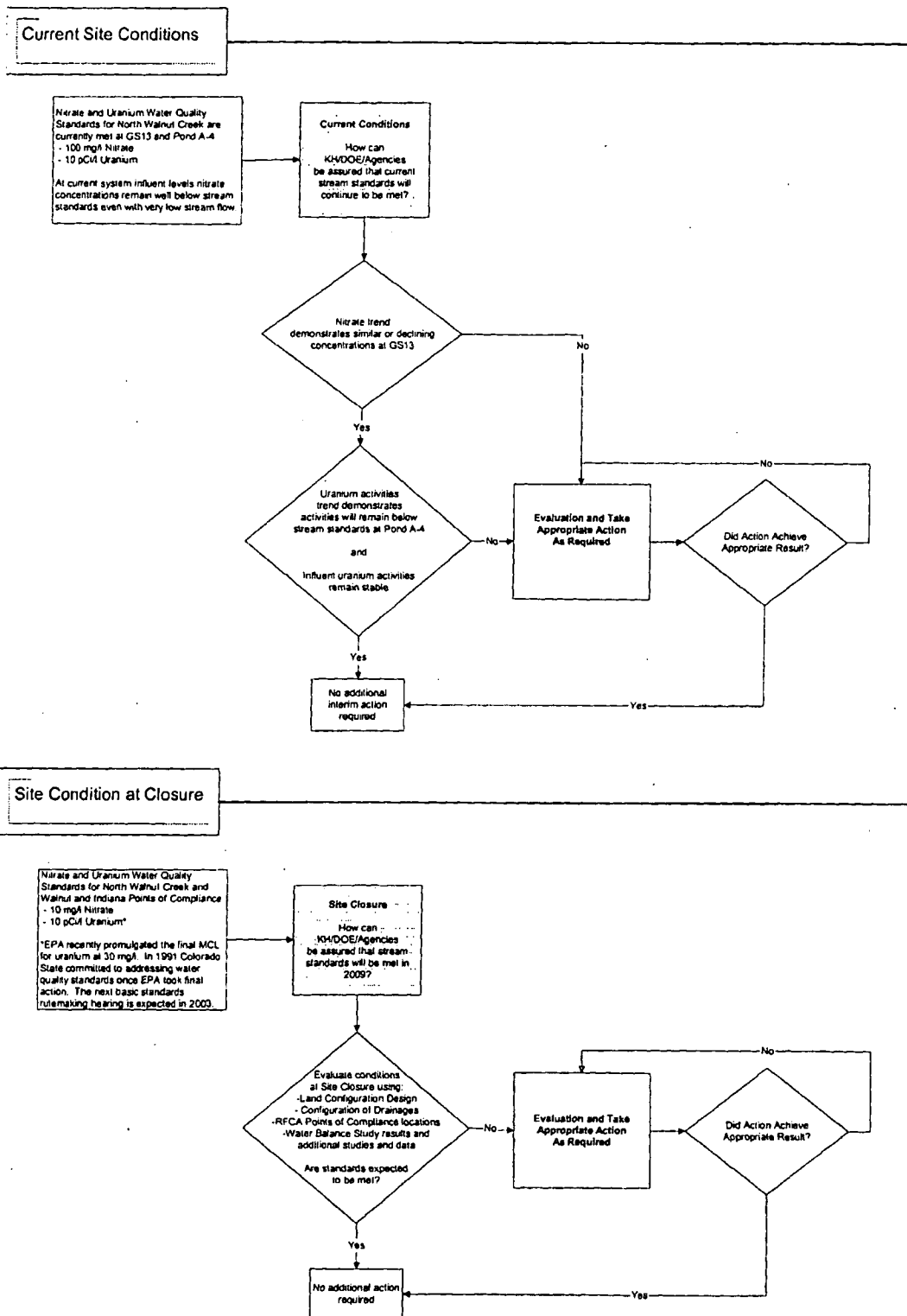
D. Shelton, K-H

L. Butler, K-H

A. Primrose, K-H

L. Brooks, K-H

Administrative Record



Enclosure 1 – Solar Ponds Plume System Decision Tree

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